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Reviewer: Durreshwar Anjum

Timestamp: Thu Sep 27 12:25:44 EDT 2007

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Application No: 10798579 Version No: 3.0

Input Set:

Output Set:

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Elapsed: 0 hr(s) 0 min(s) 1 sec(s) 366 ms
Total Warnings: 2
Total Errors: 0
No. of SeqIDs Defined: 68
Actual SeqID Count: 68

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SEQUENCE LISTING

<110> SHINOZAKI, KAZUKO
 UMEMOTO, NAOYUKI
 MAMIYA, KANJI
 TOGURI, TOSHIHIRO

<120> PRODUCTION OF PLANTS HAVING IMPROVED ROOTING EFFICIENCY
 AND VASE LIFE USING STRESS-RESISTANCE GENE

<130> 081356-0210

<140> 10798579

<141> 2004-03-12

<150> JP 2003-71082

<151> 2003-03-14

<160> 68

<170> PatentIn Ver. 3.3

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atg aac tca ttt tct gct ttt tct gaa atg ttt ggc tcc gat tac gag 166

Met Asn Ser Phe Ser Ala Phe Ser Glu Met Phe Gly Ser Asp Tyr Glu

1 5 10 15

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Ser Ser Val Ser Ser Gly Gly Asp Tyr Ile Pro Thr Leu Ala Ser Ser

20 25 30

tgc ccc aag aaa ccg gcg ggt cgt aag aag ttt cgt gag act cgt cac 262

Cys Pro Lys Lys Pro Ala Gly Arg Lys Lys Phe Arg Glu Thr Arg His

35 40 45

cca ata tac aga gga gtt cgt cgg aga aac tcc ggt aag tgg gtt tgt 310

Pro Ile Tyr Arg Gly Val Arg Arg Arg Asn Ser Gly Lys Trp Val Cys

50 55 60

gag gtt aga gaa cca aac aag aaa aca agg att tgg ctc gga aca ttt 358

Glu Val Arg Glu Pro Asn Lys Lys Thr Arg Ile Trp Leu Gly Thr Phe

65 70 75 80

caa acc gct gag atg gca gct cga gct cac gac gtt gcc gct tta gcc 406
 Gln Thr Ala Glu Met Ala Ala Arg Ala His Asp Val Ala Ala Leu Ala
 85 90 95

ctt cgt ggc cga tca gcc tgt ctc aat ttc gct gac tcg gct tgg aga 454
 Leu Arg Gly Arg Ser Ala Cys Leu Asn Phe Ala Asp Ser Ala Trp Arg
 100 105 110

ctc cga atc ccg gaa tca act tgc gct aag gac atc caa aag gcg gcg 502
 Leu Arg Ile Pro Glu Ser Thr Cys Ala Lys Asp Ile Gln Lys Ala Ala
 115 120 125

gct gaa gct gcg ttg gcg ttt cag gat gag atg tgt gat gcg acg acg 550
 Ala Glu Ala Ala Leu Ala Phe Gln Asp Glu Met Cys Asp Ala Thr Thr
 130 135 140

gat cat ggc ttc gac atg gag gag acg ttg gtg gag gct att tac acg 598
 Asp His Gly Phe Asp Met Glu Glu Thr Leu Val Glu Ala Ile Tyr Thr
 145 150 155 160

gcg gaa cag agc gaa aat gcg ttt tat atg cac gat gag gcg atg ttt 646
 Ala Glu Gln Ser Glu Asn Ala Phe Tyr Met His Asp Glu Ala Met Phe
 165 170 175

gag atg ccg agt ttg ttg gct aat atg gca gaa ggg atg ctt ttg ccg 694
 Glu Met Pro Ser Leu Leu Ala Asn Met Ala Glu Gly Met Leu Leu Pro
 180 185 190

ctt ccg tcc gta cag tgg aat cat aat cat gaa gtc gac ggc gat gat 742
 Leu Pro Ser Val Gln Trp Asn His Asn His Glu Val Asp Gly Asp Asp
 195 200 205

gac gac gta tcg tta tgg agt tat taaaactcag attattatatt ccatttttag 796
 Asp Asp Val Ser Leu Trp Ser Tyr
 210 215

tacgatactt tttattttat tattattttt agatcctttt ttagaatgga atcttcatta 856

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<213> Arabidopsis thaliana

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Cys Pro Lys Lys Pro Ala Gly Arg Lys Lys Phe Arg Glu Thr Arg His
 35 40 45

Pro Ile Tyr Arg Gly Val Arg Arg Arg Asn Ser Gly Lys Trp Val Cys
 50 55 60
 Glu Val Arg Glu Pro Asn Lys Lys Thr Arg Ile Trp Leu Gly Thr Phe
 65 70 75 80
 Gln Thr Ala Glu Met Ala Ala Arg Ala His Asp Val Ala Ala Leu Ala
 85 90 95
 Leu Arg Gly Arg Ser Ala Cys Leu Asn Phe Ala Asp Ser Ala Trp Arg
 100 105 110
 Leu Arg Ile Pro Glu Ser Thr Cys Ala Lys Asp Ile Gln Lys Ala Ala
 115 120 125
 Ala Glu Ala Ala Leu Ala Phe Gln Asp Glu Met Cys Asp Ala Thr Thr
 130 135 140
 Asp His Gly Phe Asp Met Glu Glu Thr Leu Val Glu Ala Ile Tyr Thr
 145 150 155 160
 Ala Glu Gln Ser Glu Asn Ala Phe Tyr Met His Asp Glu Ala Met Phe
 165 170 175
 Glu Met Pro Ser Leu Leu Ala Asn Met Ala Glu Gly Met Leu Leu Pro
 180 185 190
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<222> (167)..(1171)

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 ttttcaaatt tcgtcccta tagatttgtg tgtttctggg aaggag atg gca gtt 175
 Met Ala Val
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tat gat cag agt gga gat aga aac aga aca caa att gat aca tcg agg 223
 Tyr Asp Gln Ser Gly Asp Arg Asn Arg Thr Gln Ile Asp Thr Ser Arg
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| aaa agg aaa tct aga agt aga ggt gac ggt act act gtg gct gag aga | 271 |
| Lys Arg Lys Ser Arg Ser Arg Gly Asp Gly Thr Thr Val Ala Glu Arg | |
| 20 25 30 35 | |
| tta aag aga tgg aaa gag tat aac gag acc gta gaa gaa gtt tct acc | 319 |
| Leu Lys Arg Trp Lys Glu Tyr Asn Glu Thr Val Glu Glu Val Ser Thr | |
| 40 45 50 | |
| aag aag agg aaa gta cct gcg aaa ggg tcg aag aag ggt tgt atg aaa | 367 |
| Lys Lys Arg Lys Val Pro Ala Lys Gly Ser Lys Lys Gly Cys Met Lys | |
| 55 60 65 | |
| ggg aaa gga gga cca gag aat agc cga tgt agt ttc aga gga gtt agg | 415 |
| Gly Lys Gly Gly Pro Glu Asn Ser Arg Cys Ser Phe Arg Gly Val Arg | |
| 70 75 80 | |
| caa agg att tgg ggt aaa tgg gtt gct gag atc aga gag cct aat cga | 463 |
| Gln Arg Ile Trp Gly Lys Trp Val Ala Glu Ile Arg Glu Pro Asn Arg | |
| 85 90 95 | |
| ggg agc agg ctt tgg ctt ggt act ttc cct act gct caa gaa gct gct | 511 |
| Gly Ser Arg Leu Trp Leu Gly Thr Phe Pro Thr Ala Gln Glu Ala Ala | |
| 100 105 110 115 | |
| tct gct tat gat gag gct gct aaa gct atg tat ggt cct ttg gct cgt | 559 |
| Ser Ala Tyr Asp Glu Ala Ala Lys Ala Met Tyr Gly Pro Leu Ala Arg | |
| 120 125 130 | |
| ctt aat ttc cct cgg tct gat gcg tct gag gtt acg agt acc tca agt | 607 |
| Leu Asn Phe Pro Arg Ser Asp Ala Ser Glu Val Thr Ser Thr Ser Ser | |
| 135 140 145 | |
| cag tct gag gtg tgt act gtt gag act cct ggt tgt gtt cat gtg aaa | 655 |
| Gln Ser Glu Val Cys Thr Val Glu Thr Pro Gly Cys Val His Val Lys | |
| 150 155 160 | |
| aca gag gat cca gat tgt gaa tct aaa ccc ttc tcc ggt gga gtg gag | 703 |
| Thr Glu Asp Pro Asp Cys Glu Ser Lys Pro Phe Ser Gly Gly Val Glu | |
| 165 170 175 | |
| ccg atg tat tgt ctg gag aat ggt gcg gaa gag atg aag aga ggt gtt | 751 |
| Pro Met Tyr Cys Leu Glu Asn Gly Ala Glu Glu Met Lys Arg Gly Val | |
| 180 185 190 195 | |
| aaa gcg gat aag cat tgg ctg agc gag ttt gaa cat aac tat tgg agt | 799 |
| Lys Ala Asp Lys His Trp Leu Ser Glu Phe Glu His Asn Tyr Trp Ser | |
| 200 205 210 | |
| gat att ctg aaa gag aaa gag aaa cag aag gag caa ggg att gta gaa | 847 |
| Asp Ile Leu Lys Glu Lys Glu Lys Gln Lys Glu Gln Gly Ile Val Glu | |
| 215 220 225 | |
| acc tgt cag caa caa cag cag gat tcg cta tct gtt gca gac tat ggt | 895 |
| Thr Cys Gln Gln Gln Gln Gln Asp Ser Leu Ser Val Ala Asp Tyr Gly | |
| 230 235 240 | |

tgg ccc aat gat gtg gat cag agt cac ttg gat tct tca gac atg ttt 943
 Trp Pro Asn Asp Val Asp Gln Ser His Leu Asp Ser Ser Asp Met Phe
 245 250 255

 gat gtc gat gag ctt cta cgt gac cta aat ggc gac gat gtg ttt gca 991
 Asp Val Asp Glu Leu Leu Arg Asp Leu Asn Gly Asp Asp Val Phe Ala
 260 265 270 275

 ggc tta aat cag gac cgg tac ccg ggg aac agt gtt gcc aac ggt tca 1039
 Gly Leu Asn Gln Asp Arg Tyr Pro Gly Asn Ser Val Ala Asn Gly Ser
 280 285 290

 tac agg ccc gag agt caa caa agt ggt ttt gat ccg cta caa agc ctc 1087
 Tyr Arg Pro Glu Ser Gln Gln Ser Gly Phe Asp Pro Leu Gln Ser Leu
 295 300 305

 aac tac gga ata cct ccg ttt cag ctc gag gga aag gat ggt aat gga 1135
 Asn Tyr Gly Ile Pro Pro Phe Gln Leu Glu Gly Lys Asp Gly Asn Gly
 310 315 320

 ttc ttc gac gac ttg agt tac ttg gat ctg gag aac taaacaaaac 1181
 Phe Phe Asp Asp Leu Ser Tyr Leu Asp Leu Glu Asn
 325 330 335

 aatatgaagc tttttggatt tgatatttgc cttaatccca caacgactgt tgattctcta 1241

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<213> Arabidopsis thaliana

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 35 40 45

 Val Ser Thr Lys Lys Arg Lys Val Pro Ala Lys Gly Ser Lys Lys Gly
 50 55 60

 Cys Met Lys Gly Lys Gly Gly Pro Glu Asn Ser Arg Cys Ser Phe Arg
 65 70 75 80

 Gly Val Arg Gln Arg Ile Trp Gly Lys Trp Val Ala Glu Ile Arg Glu

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| Glu Ala Ala Ser Ala Tyr Asp Glu Ala Ala Lys Ala Met Tyr Gly Pro | | |
| 115 | 120 | 125 |
| Leu Ala Arg Leu Asn Phe Pro Arg Ser Asp Ala Ser Glu Val Thr Ser | | |
| 130 | 135 | 140 |
| Thr Ser Ser Gln Ser Glu Val Cys Thr Val Glu Thr Pro Gly Cys Val | | |
| 145 | 150 | 155 |
| His Val Lys Thr Glu Asp Pro Asp Cys Glu Ser Lys Pro Phe Ser Gly | | |
| 165 | 170 | 175 |
| Gly Val Glu Pro Met Tyr Cys Leu Glu Asn Gly Ala Glu Glu Met Lys | | |
| 180 | 185 | 190 |
| Arg Gly Val Lys Ala Asp Lys His Trp Leu Ser Glu Phe Glu His Asn | | |
| 195 | 200 | 205 |
| Tyr Trp Ser Asp Ile Leu Lys Glu Lys Glu Lys Gln Lys Glu Gln Gly | | |
| 210 | 215 | 220 |
| Ile Val Glu Thr Cys Gln Gln Gln Gln Gln Asp Ser Leu Ser Val Ala | | |
| 225 | 230 | 235 |
| Asp Tyr Gly Trp Pro Asn Asp Val Asp Gln Ser His Leu Asp Ser Ser | | |
| 245 | 250 | 255 |
| Asp Met Phe Asp Val Asp Glu Leu Leu Arg Asp Leu Asn Gly Asp Asp | | |
| 260 | 265 | 270 |
| Val Phe Ala Gly Leu Asn Gln Asp Arg Tyr Pro Gly Asn Ser Val Ala | | |
| 275 | 280 | 285 |
| Asn Gly Ser Tyr Arg Pro Glu Ser Gln Gln Ser Gly Phe Asp Pro Leu | | |
| 290 | 295 | 300 |
| Gln Ser Leu Asn Tyr Gly Ile Pro Pro Phe Gln Leu Glu Gly Lys Asp | | |
| 305 | 310 | 315 |
| Gly Asn Gly Phe Phe Asp Asp Leu Ser Tyr Leu Asp Leu Glu Asn | | |
| 325 | 330 | 335 |

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<212> DNA

<213> Arabidopsis thaliana

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<222> (164)..(802)

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acttaaacct tatccagttt cttgaaacag agtactctga tca atg aac tca ttt 175

Met Asn Ser Phe

1

tca gct ttt tct gaa atg ttt ggc tcc gat tac gag cct caa ggc gga 223

Ser Ala Phe Ser Glu Met Phe Gly Ser Asp Tyr Glu Pro Gln Gly Gly

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15

20

gat tat tgt ccg acg ttg gcc acg agt tgt ccg aag aaa ccg gcg ggc 271

Asp Tyr Cys Pro Thr Leu Ala Thr Ser Cys Pro Lys Lys Pro Ala Gly

25

30

35

cgt aag aag ttt cgt gag act cgt cac cca att tac aga gga gtt cgt 319

Arg Lys Lys Phe Arg Glu Thr Arg His Pro Ile Tyr Arg Gly Val Arg

40

45

50

caa aga aac tcc ggt aag tgg gtt tct gaa gtg aga gag cca aac aag 367

Gln Arg Asn Ser Gly Lys Trp Val Ser Glu Val Arg Glu Pro Asn Lys

55

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65

aaa acc agg att tgg ctc ggg act ttc caa acc gct gag atg gca gct 415

Lys Thr Arg Ile Trp Leu Gly Thr Phe Gln Thr Ala Glu Met Ala Ala

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Arg Ala His Asp Val Ala Ala Leu Ala Leu Arg Gly Arg Ser Ala Cys

85

90

95

100

ctc aac ttc gct gac tcg gct tgg cgg cta cga atc ccg gag tca aca 511

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105

110

115

tgc gcc aag gat atc caa aaa gcg gct gct gaa gcg gcg ttg gct ttt 559

Cys Ala Lys Asp Ile Gln Lys Ala Ala Ala Glu Ala Ala Leu Ala Phe

120

125

130

caa gat gag acg tgt gat acg acg acc acg aat cat ggc ctg gac atg 607

Gln Asp Glu Thr Cys Asp Thr Thr Thr Asn His Gly Leu Asp Met

135

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gag gag acg atg gtg gaa gct att tat aca ccg gaa cag agc gaa ggt 655

Glu Glu Thr Met Val Glu Ala Ile Tyr Thr Pro Glu Gln Ser Glu Gly

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155

160

gcg ttt tat atg gat gag gag aca atg ttt ggg atg ccg act ttg ttg 703

Ala Phe Tyr Met Asp Glu Glu Thr Met Phe Gly Met Pro Thr Leu Leu

165

170

175

180

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185

190

195

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 Asn His Asn Tyr Asp Gly Glu Gly Asp Gly Asp Val Ser Leu Trp Ser
 200 205 210

tac taatattcga tagtcgtttc cttttttgta ctatagtttg aaaatattct 852
 Tyr

agttcctttt tttagaatgg ttccttcatt ttattttatt ttattgttgt agaaacgagt 912

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Pro Gln Gly Gly Asp Tyr Cys Pro Thr Leu Ala Thr Ser Cys Pro Lys
 20 25 30

Lys Pro Ala Gly Arg Lys Lys Phe Arg Glu Thr Arg His Pro Ile Tyr
 35 40 45

Arg Gly Val Arg Gln Arg Asn Ser Gly Lys